Invitation for Public Comment on

Dr. Robert Budnitz, Dr. William Kastenberg, and Dr. Michael Quinn

As Candidates for Appointment to the Diablo Canyon Independent Safety Committee
Term: July 1, 2019 through June 30, 2022

On December 19, 2018, the California Public Utilities Commission (CPUC) announced it was seeking applications from qualified persons to become nominees to fill a vacancy on the Diablo Canyon Independent Safety Committee (Committee) for a three-year term beginning July 1, 2019.

The Committee consists of three members, one each appointed by the Governor, the California Attorney General, and the Chair of the California Energy Commission (CEC). The Committee assesses the safety of the operations of Pacific Gas and Electric Company's Diablo Canyon nuclear power plant and has authority to review quarterly reports and conduct on-site inspections. The Committee reports its observations and recommendations to PG&E annually; the Committee then transmits its report, along with PG&E's response, to the Governor, the California Attorney General, the CEC, and the CPUC.

According to the procedures adopted by the Commission in Decision 07-01-028, the President of the CPUC selects no more than three qualified candidates responding to the request for applications, plus the incumbent member whose term is expiring, if the incumbent consents to reappointment. The CPUC will issue a resolution ratifying the President's selection of candidates for appointment. The California Attorney General shall appoint the Committee member for the term beginning on July 1, 2019 from the list of candidates selected by the President of the CPUC and ratified by the Commission.

Applications were received from Dr. William Kastenberg, and Dr. Michael Quinn in response to the CPUC's December 19, 2018 announcement. The incumbent member whose term is expiring, Dr. Robert Budnitz, informed the CPUC's Energy Division that he consents to reappointment for a new three-year term beginning July 1, 2019. Their qualifications are summarized below.

The CPUC welcomes public comments on the qualifications of Dr. Budnitz, Dr. Kastenberg, and Dr. Quinn. Please e-mail comments to david.zizmor@cpuc.ca.gov or mail them to:

David Zizmor
Energy Division, California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Comments must be received (e-mail) or postmarked by March 19, 2019.

Dr. Robert Budnitz (Incumbent)

Dr. Budnitz is currently an incumbent member of the Diablo Canyon Independent Safety Committee (DCISC), serving a term that began July 1, 2016 and will end June 30, 2019, as appointed by then Attorney General Kamala Harris. Dr. Budnitz was originally appointed to the DCISC by then Attorney General Edmund G. Brown Jr. in 2007 for a term that ran through mid-2010.

In addition to his role on the DCISC, Dr. Budnitz recently retired from the scientific staff at the University of California's Lawrence Berkeley National Laboratory (LBNL), where he worked on nuclear power safety and security. He currently works as a consultant, advising on reactor safety both domestically and internationally. He is a member of the National Academy of Engineering. His current research is largely in the area of the seismic safety of nuclear reactors, most of which is supported by the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE). From 2002 to 2007, he was employed at UC's Lawrence Livermore National Laboratory; during part of that period he also worked on a two-year special assignment in Washington D.C. assisting the Director of DOE's Office of Civilian Radioactive Waste Management to develop a new Science & Technology Program for the Yucca Mountain Project. Dr. Budnitz additionally serves on advisory committees for organizations such as the American Nuclear Society and the American Society of Mechanical Engineers.

From 1967 to 1978, Dr. Budnitz was on the staff of the Lawrence Berkeley National Laboratory, serving in 1975-1978 as Associate Director and Head of LBNL's Energy & Environment Division. The programs under his direction included energy-efficiency, deep-geologic radioactive waste disposal, solar energy, geothermal energy, fusion energy, transportation technology, chemical-engineering for alternate fuels, environmental instrumentation, air-pollution phenomena, and energy policy analysis.

From 1978 to 1980, he was a senior officer on the staff of the NRC. In 1978-1979, he was the Deputy Director, NRC Office of Nuclear Regulatory Research, and in 1979-1980 he became the Director of that same Office. In this two-year period, Dr. Budnitz was responsible for formulating and guiding the large NRC research program that constituted over $200 million/year at the time. His responsibilities included assuring that all major areas of reactor-safety research, waste-management research, and fuel-cycle-safety research necessary to serve the mission of the NRC were adequately supported. Additionally, following the Three Mile Island reactor accident, Dr. Budnitz served the last 7 months of 1979 as the "technical coordinator" of the important NRC internal inquiry examining the accident, known as the "Special Inquiry Group,"

After leaving the NRC in 1980 and until late 2002, Dr. Budnitz worked as a private consultant on reactor safety, radioactive waste, and related subjects, as president of Future Resources Associates, Inc., a small firm he founded in Berkeley in 1981. His clients included both industrial and governmental organizations. A majority of his research support in the post-1981 period came from governmental sources, including NRC, DOE, and the U.S. Environmental Protection Agency, as well as international and

intergovernmental organizations such as the International Atomic Energy Agency, OECD Nuclear Energy Agency, and the European Bank for Reconstruction and Development.

After the serious Japanese reactor accident at Fukushima in March 2011, caused by an earthquake-triggered tsunami that flooded the site and damaged 4 of the 6 reactors on-site, the U.S. Secretary of Energy and the President's Science Adviser appointed a special "science panel" to advise them about the best way early-on to interpret the incomplete technical information that was available from Japan, and about how best the U.S. might assist the Japanese in responding. Dr. Budnitz served on that high-level panel for the duration of 2011.

Some of Dr. Budnitz's other assignments include serving as chairman of an OECD/NEA international Specialist Meeting that evaluated the adequacy of our current understanding of possible terrorist attacks on nuclear facilities, a few months after the terrorist attacks on New York and Washington on 9/11/2001; he chaired the "Senior Seismic Hazards Analysis Committee" supported by DOE, NRC, and the Electric Power Research Institute, that developed an advanced probabilistic seismic hazard methodology, published in 1997, which has now become the commonly accepted way to do this type of hazard analysis and was used recently in the most advanced studies of the seismic hazards at the Diablo Canyon site; he chaired both the NRC's "Expert Panel on Seismic Margins" that developed the widely-used seismic-margin methodology for assessing the seismic capabilities of existing nuclear facilities, and the DOE's "Senior External Events Review Group" that advised DOE on seismic and wind design criteria for their proposed new production reactor design; and he chaired the "Committee on Remediation of Buried and Tank Wastes" for several years for the National Research Council/National Academy of Sciences under the Board on Radioactive Waste Management. Dr. Budnitz has also worked extensively in the fields of nuclear-reactor safety, high-level-waste safety, and nuclear-facility safety assessment, including probabilistic risk assessment.

Dr. Budnitz earned a Ph.D. in physics from Harvard University in 1968, an M.A. in physics from Harvard in 1962, and a B.A. in physics from Yale University in 1961.

Dr. William E. Kastenberg

On December 31, 2007, Dr. Kastenberg retired as the Daniel M. Tellep Distinguished Professor of Engineering, Emeritus, from the University of California, Berkeley. Professor Kastenberg was elected to the National Academy of Engineering in 1997 for his contributions to nuclear reactor safety and risk. He was elected a Fellow of the American Association for the Advancement of Science in 1990 and of the American Nuclear Society in 1978. Kastenberg has won distinguished teaching awards from the American Nuclear Society (Arthur Holly Compton Award in 2000), the American Society for Engineering Education (1973), and the Engineering Graduate Students' Association at UCLA, (1971).

Dr. Kastenberg was appointed as a part-time Administrative Law Judge—Technical on the Atomic Safety and Licensing Board for the U.S. Nuclear Regulatory Commission (2007-present). He has been involved in the adjudication process regarding safety and environmental issues associated with plant license extension for two nuclear power plants, and one proposed new nuclear power plant.

Dr. Kastenberg was appointed by the Governor of California to the Independent Safety Committee for the Diablo Canyon Nuclear Power Plant, and served for 10 years (1990-2000). He was the first appointee and the first chairman of the Committee. During that time, he became intimately knowledgeable regarding all aspects of Diablo Canyon plant design, operations, operator training, licensing and safety. He also instituted many of the Committee's processes and procedures that are still in effect today.

UC President Atkinson appointed Dr. Kastenberg chairman of the Scientific Panel of the Advisory Group on Low-Level Radioactive Waste, reporting to Governor Davis of California (1999-2000). The panel held public meetings and worked very closely with public interest groups on social and technical issues. Kastenberg was also a founder and the Director of the UC Berkeley, Center for Nuclear and Toxic Waste Management. The Center focused on both institutional and technical issues and included graduate students and faculty from Engineering, Public Policy, Political Science and Energy and Resources at UCB.

Dr. Kastenberg has also been a member of the Advisory Committee on Nuclear Facility Safety, U.S. Department of Energy (DOE, 1988-1991) and served as the Sub-committee Chairman for safety and risk analysis. In this capacity, he was involved in reviewing the safety of DOE's research and production reactors, and other nuclear process facilities. He has served on external safety review committees for Los Alamos National Laboratory, Lawrence Livermore National Laboratory, Argonne National Laboratory and Brookhaven National Laboratory. Kastenberg chaired the Peer Review Committee for the Draft Reactor Risk Reference Document, NUREG-1150 (1987-1988). The committee reviewed the results of advancements in risk assessment methodology with application to five U.S. Nuclear Power Plants. Subsequently, the committees' recommendations were incorporated into the final draft and became the basis for risk informed regulation.

Dr. Kastenberg spent a sabbatical year as a Senior Fellow with the Advisory Committee on Reactor Safeguards, USNRC (1979-1980) working on TMI "Lessons Learned," and the development of Quantitative Safety Goals. Many of the recommendations based on his work were implemented at a number of nuclear power plants in the United States. He spent a sabbatical year at the Nuclear Research Center in Karlsruhe, Germany, (1972-1973), where he worked on safety issues related to a liquid metal cooled fast breeder reactor (SNR-300).

Dr. Kastenberg has developed and taught graduate courses on reactor safety and risk for over 30 years. He was among the first faculty nationwide to develop academic courses on Fast Reactor Safety (1970s), Light Water Reactor Safety (1980s) and Nuclear Reactor Risk Analysis (1990s). In addition to teaching basic theories of safety and risk, Kastenberg used the PSARs and FSARs of existing nuclear power plants (including Diablo Canyon) as a basis for lectures, homework and term-projects. Former graduate students that have completed their research under his direction have taken leadership positions in academia, government, and industry.

Professor Kastenberg has authored or co-authored over 150 published papers in peer-reviewed journals and conference proceedings related to nuclear reactor safety, nuclear reactor risk assessment, risk management, public health and environmental risk assessment, and multi-stakeholder decision making.

Dr. Michael Quinn

Michael Quinn has invested over 40 years into the public health and safety of the nuclear industry, entailing 25 years in power block operations at a nuclear power station, and during the past 18 years as an executive operations consultant to the nuclear industry in the U.S. and Canada.

Dr. Quinn's expertise resides in Nuclear Operations; Significant Operational Event Assessments; Nuclear Safety; Nuclear Inspection and Evaluation, and Corrective Action Program/ Human Performance/ Safety Culture assessments.

Throughout his nuclear power career Michael has operated, consulted, and lived to the tenets of Compliance, Integrity, Transparency, and Competency in his nuclear power operation endeavors.

Nuclear Operations Experience within the Power Block

While in the power block of a nuclear unit with a large nuclear utility from 1975 to 1999, Michael earned a U.S. NRC Senior Reactor Operator License on a Westinghouse Pressurized Water Reactor unit, and held leadership positions that included Director of Nuclear Station Services; Nuclear Station Duty Officer; Chair-Nuclear Plant Operations Review Committee [50.59 Reviews]; Corrective Action Review Board (CARB) Chair; Director of Nuclear Station Emergency Operations; Refueling and Maintenance Outage Shift Manager; Manager of Chemistry and Radiochemistry; and Project Manager, reporting to the President, on a three-unit, four-year Nuclear Station Recovery Team.

During this time frame Michael was a member of the senior station leadership team at Haddam Neck Station, a nuclear unit that consistently performed at U.S. NRC SALP-1 and INPO 1 performance levels (presently termed U.S. NRC Column 1 and INPO 1 respectively).

Current Nuclear Operations Experience Consulting to Nuclear Regulators, Licensees, and Suppliers

Since 1999 Michael has been engaged by executives in the safe operation of nuclear units, as well as in the new build, refurbishment and decommissioning sectors of the nuclear industry in the U.S. and Canada. On the regulatory side, during the 2006-2019 period he has been contracted to train U.S. NRC resident inspectors and regional office technical staff on evaluating significant nuclear licensee operational events and processes, with a focus on nuclear safety and the three cross-cutting areas of Human Performance, Problem Identification and Resolution (PI&R), and Safety Culture.

During the past 18-plus years, Michael has been, and is presently: conducting nuclear station and nuclear licensee program and operational assessments of nuclear organizations; leading/performing root cause evaluations on significant nuclear events;

and leading recovery project management for nuclear licensees and suppliers. His primary focus is on nuclear safety and the three cross-cutting areas.

In addition, Dr. Quinn continues to assess and to remediate licensee and supplier organizational and corrective action programs; provides PI&R, Human Performance, and Safety Culture consulting, coaching and training; and provides related consulting services to several nuclear industry sectors. These sectors include the commercial nuclear power industry in the U.S. and Canada; U.S. Government (e.g., U.S. NRC, U.S. Department of Energy); and nuclear supplier organizations (large nuclear steam supply system providers (e.g., Westinghouse and Mitsubishi) as well as smaller nuclear suppliers to the new builds in South Carolina and Georgia).

Selected nuclear industry assessments that Dr. Quinn has led or consulted to include:

- Significant safety issues in a high-level, trans-uranic nuclear waste underground facility;
- Consequential design phase issues on the 'new build' nuclear project for North Anna 3;
- Significant safety issues on the disassembly and reassembly of components on two CANDU reactors under refurbishment;
- Loss of Offsite Power to the Operations power block of a 1200 MWe nuclear unit;
- Nuclear fuel handling project upgrade failures at five separate nuclear sites involving distinctly different failures during a four-month refueling season;
- A nuclear unit cooling tower failure;
- Five-month reliability assessment of Vermont Yankee Nuclear Station by a large team;
- Collective Significance assessment on six safety systems' performance challenges at a PWR;
- Collective Significance on Spent Fuel Transfer issues at a decommissioning station;
- Investigating safety-related components that did not meet acceptance criteria at each of the four 'new build' nuclear units in SC and GA;
- Significant transuranic (alpha) ingestion/ uptake by over 500 craft workers at a nuclear power station;
- Led an assessment to determine factors contributing to 'engineering rigor' challenges in a large engineering organization responsible for nuclear wastewater management at a US DOE site.

From a major nuclear industry 'campaign' perspective, Dr. Quinn has been/is engaged in many industry issue campaigns and challenges that include/have included:

- Safety culture challenges to nuclear operations;
- Post-accident response and subsequent upgrades (0737);
- Containment sump screen upgrade (GSI-191);
- Groundwater tritium;
- Safeguards at operating and decommissioning nuclear units
- Nuclear fuel handling, storage, cask operations;
- Independent Spent Fuel Storage Installations (ISFSI);

- Radioactive effluents and radioactive waste treatment
- Radiological/ trans-uranic uptakes to over 500 workers;
- Corrective action program challenges, notably 10CFR50 Appendix B Criteria;
- Cumulative Impact/ Nuclear Promise Efficiency Bulletins;
- And very importantly, the impact that a 'final shutdown decision' (as Diablo Canyon is facing in 5-6 years) has had on nuclear station staffs' performance while attempting to maintain focus on operational excellence. Example challenges included maintaining operations 'within the envelope,' key staff retention, increase in event frequency and severity, increased employee concerns, and safety culture declines, among others.

Starting in 2006 and continuing into 2019, Dr. Quinn has trained U.S. NRC inspectors and technical staff in a concentrated three-day course to evaluate significant nuclear licensee events and incident reports, training over 600 U.S. NRC inspectors and technical staff during over 40 deliveries. He is contracted through 2022. In 2017, Dr. Quinn was requested to present this training to the first cohort from the Japan Nuclear Regulation Authority, and in later 2017, he was requested to present the training to the first cohort of the Canadian Nuclear Safety Commission.

Dr. Quinn is the only individual who has taught nuclear event causal analysis evaluation to the US Nuclear Regulatory Commission, the Japan Nuclear Regulation Authority, and the Canadian Nuclear Safety Commission.

Over the past 16 years Dr. Quinn has presented more than 20 workshops and seminars on current nuclear industry issues and challenges at nuclear industry conferences and forums in the US and Canada, as well as for IAEA. He has also taught 23 Management Systems, Strategy, OB/OD, and Management courses at two Connecticut universities.

LICENSES/ CERTIFICATIONS CONTRIBUTORY TO A POTENTIAL POSITION ON THE DCISC:

- U.S. NRC Senior Reactor Operator License #10071 on a Westinghouse PWR (Diablo Canyon is a Westinghouse PWR NSSS design)
- Certified Root Cause Investigator (Nuclear Safety Review Concepts Event Evaluation and PII)
- Certified Root Cause Trainer
- Certified Radiation Safety Officer

Michael earned a Doctorate in Organizational Management Systems (organizational system dynamics) and Executive Master of Business Administration degrees from the University of New Haven. He previously earned a Bachelor of Science degree in Chemistry from Charter Oak College.

Michael's collective past and current nuclear power experience is congruent with the Diablo Canyon Independent Safety Committee's (DCISC) mission and requirements. He

can bring current and comprehensive nuclear operations assessment experience to complement the depth and breadth of the DCISC team.

Beyond his nuclear operations experience and academic background, Dr. Quinn has a demonstrated history of articulating his assessments in an objective, empirically-based, and plain language manner to the full spectrum of stakeholders (e.g., utility commissions, station staff, utility staff, the public, state and federal regulators, interest groups, and the boardroom, among others).

In summary, Michael offers current and comprehensive nuclear industry analysis and assessment experience that support consideration of his candidacy for a role on the Diablo Canyon Independent Safety Committee.

On a non-nuclear note, Michael is a long-time blood donor (since 1973), and presently serves as a member of the Connecticut Community Care Board of Directors, a non-profit health care service provider for over 9,000 individuals in need.

LinkedIn: https://www.linkedin.com/in/quinnmd/